and scattered remains should no longer be decipherable by the expert alone, but come into congruous and intelligible forms, readily to be understood by any, even a popular, student of nature.

In this first issue the Mammals and Reptiles have special notice, the Fishes and Invertebrates not having yet been completely arranged in the new rooms and cases. For all, however, there are good general remarks as to their natural classification and occurrence, whilst for the two first-mentioned groups there is much valuable information, with a geological table showing their range in time, and thirty-one good figures, eight of which are original, the others having been borrowed from the publishers of first-class palæontological books.

MISCELLANEOUS.

Norwegian and Scottish Lepidoptera. By M. W. M. Schöyen.

M. Schöyen publishes in the 'Nyt Magazin for Naturvidenskaberne' (vol. xxvii. pp. 1–54) an elaborate account of the investigations he made in 1880 into the Lepidopterous fauna of the district of Romsdal, the coast district of Norway between 60° and 64° N. lat. He gives a list of 356 species, a great many of which occur in this country; and his remarks upon some of them will be of interest to British lepidopterists.

In his introductory remarks he institutes a comparison between the Lepidopterous faunas of Norway, east and west of the mountain-chain, and between those of Norway and Scotland, which will prove of more general interest. His comparison of the known species of Lepidoptera in Eastern and Western Norway under the same latitudes is as follows:—

	Norway west of the Fjeld.	Norway east of the Fjeld.
Rhopalocera	47	82
Sphinges	12	29
Bombyces	36	69
Noctuæ	83	196
Geometræ	95	170
Macrolepidoptera	273	546
Pyralides	37	77
Tortrices	52	160
Tineides	66	165
Pterophorides	7	23
Microlepidoptera	162	425
Total	435	971

These numbers must of course be regarded only as provisional; but the main point, namely that Norway west of the Fjeld has a much smaller number of species than Norway east of the Fjeld, will certainly hold good. The author indicates the agreement of this with the results indicated in Speyer's well-known work on the geographical distribution of the Lepidoptera of Germany and Switzerland, according to which the number of species decreases pretty uniformly towards the west and north-west—that is, towards the coasts, a phenomenon explicable by the cooler and moister summers of the coast regions as compared with the warmer and more sunny summers of the continental regions, which are far more favourable to the development of the Lepidoptera, and especially of the Rhopalocera and other light-loving species.

The investigation of the Scottish Lepidoptera gives a further confirmation of these results. According to Dr. Buchanan White's "Lepidoptera of Scotland" ('Scottish Naturalist,' 1872, &c.), Scotland possesses only 39 known species of Rhopalocera, against the 47 of Western Norway, which shows the action of the humid insular climate in reducing the number of species of this heliophilous group. Only 25 species are common to both regions, the following 21 species occurring in Norway west of the Fjeld not having yet been observed in Scotland:—*Papilio machaon*, *Aporia cratægi*, *Leucophasia sinapis*, *Polyommatus virgaureæ* and *hippothoë*, *Lycæna argus*, *optilete*, *eumodon*, *argiolus*, and *semiargus*, *Vanessa c-album*, *Melitæa dictynna*, *Argynnis pales*, *lathonia*, and *niobe*, *Erebia lappona* and *ligea* (said to have been found, but the statement is more than doubtful), *Pararge mæra* and *hiera*, *Syrichtus serratulæ*, and *Hesperia comma*. On the other hand, we have in Scotland the following five species, hitherto observed in Norway only east of the Fjeld—*Colias edusa*, *Zephyrus quercus*, *Argynnis paphia*, *Pararge megæra*, and *Syrichtus malvæ*; and the following eight species not yet found in Norway—*Nemeobius lucina*, *Vanessa polychloros* (cited in the 'Enumeratio' as Norwegian, but doubtful), and *V. io*, *Melitæa aurinia*, *Erebia epiphron* and *æthiops*, *Epinephile tithonus*, and *Hesperia thaumas*.

Of Sphingidæ (including Sesiidæ and Zygænidæ) Scotland has in all 25 species, among which are all the West-Norwegian species except three, namely *Sphinx pinastri* (said to be found near Edinburgh, but doubtful), *Sesia spheciformis*, and *Zygæna loniceræ*.

The Scottish Bombycidæ number 69 species, including also all the Western Norwegian forms but 3, namely *Ocneria dispar* (?), *Pygæra curtula* (the larvæ of both species are said to have been found, but this is uncertain), and *Lasiocampa ilicifolia*.

The 200 species of Noctuæ recorded for Scotland include all the West-Norwegian species except 8, namely *Acronycta auricoma*, *Agrotis grisescens*, *Dianthœcia proxima*, *Hadena lateritia* and *polyodon*, *Amphipyra pyramidea*, *Xylina furcifera*, and *Toxocampa pastinum*; and the 184 Scottish Geometræ also include all but 13 of the Western-Norwegian species, namely:—*Jodis putata*, *Acidalia incanata*, *Gnophos sordaria*, *Pygmæna fusca*, *Lythria purpuraria*, *Lygris dictyides*, *Cidaria quadrifasciaria*, *unangulata*, *vespertaria*, and *ob-*

literata, and *Eupithecia linariata*, *pimpinellata* (both the last-named doubtfully recorded as occurring in Scotland), and *hyperborata*.

Comparing the whole known Lepidopterous fauna of Norway (east and west of the Fjeld) with that of Scotland, but confining the comparison to the Macrolepidoptera, the Scottish Microlepidoptera not being yet sufficiently worked out, we get the results shown in the following Table:—

	Number of species in Norway.	Number of species in Scotland.	Species common to both countries.	Norwegian species not found in Scotland.	Scottish species not found in Norway.
Rhopalocera	92	39	31	61	8
Sphinges: Sphingidæ	14	14	12	2	2
Sphinges: Sesiidæ	12	6	4	8	2
Sphinges: Zygænidæ	4	5	3	1	2
Sphinges (total)	30	25	19	11	6
Bombyces	76	69	55	21	14
Noctuæ	210	200	139	71	61
Geometræ	188	184	133	55	51
Together	596	517	377	219	140
Heterocera alone	504	478	346	158	132

Of the 140 species occurring in Scotland and not known in Norway, 80 (or more than half) are met with in Sweden—namely, Rhopalocera 5, Sphingidæ 1, Sesiidæ 1, Zygænidæ 2, Bombyces 12, Noctuæ 37, and Geometræ 22.—*Nyt Magazin for Naturvidenskaberne*, Bind xxvii. pp. 7–13.

On the Evolution of the Peridinina *and the Peculiarities of Organization which approximate them to the* Noctilucæ. By M. Pouchet.

The author brings forward some observations which, he thinks, reveal a new order of phenomena in the genesis of the Peridinians. His observations were made in the Bay of Concarneau, when the towing-net collected daily the following species:—*Ceratium furca*, Ehr.; *C. tripos*, Nitzsch; *C. tripos*, var. *megaceros*; *Dinophysis acuta*, Ehr.; ? *Protoperidium pellucidum*, Bergh; *Peridinium divergens*, Ehr.; ? *Diplopsalis lenticula*, Bergh; ? *Glenodinium cinctum*, Ehr.; ? *Gymnodinium gracile*, Bergh; ? *Prorocentrum micans*, Ehr.

The different varieties of *Ceratium furca* and *tripos* always oc-